

# **SAFETY, RISK AND THE HUMAN FACTOR IN THE TRANSPORT OF DANGEROUS GOODS – SELECTED PROBLEMS**

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The costs of transportation accidents have exceeded 200 billion euros in the European Union, which is more than the European Commission's yearly budget. According to Volvo Trucks' latest research in 2013, nine out of ten traffic accidents, including those involving hazardous goods, are caused by human mistakes. A similar situation can be observed in other branches of transportation. The report made by the Supreme Audit Office in 2013 indicates that Poland still has a very high rate of accident occurrence in Europe, second only to Romania.

In the context of the data above it must be pointed out that an important role in the transportation system's safety issues is taken by humans [1].

This article brings up very important safety issues pertaining to the transportation of hazardous goods such as: estimating risk assessment and modeling human factors as the main cause of a road accident. For the purposes of this article, Authors of the article have used heuristic techniques – particularly, fuzzy set methods – in order to build a model of human factor for the purposes of their work. This model defines human actions by text description, that is, linguistically. The specificity of fuzzy sets allows the “precision” of human actions' description to be “naturally” limited [2]. The model was conceived based on the bibliography of the subject and personally conducted survey and expert research. The results section contains specific simulations and the analysis of their results demonstrating the influence of strong and weak “destroyers” on humans.

## **References**

1. Handbook of operator fatigue (Ed.) Matthews G., Desmond P., Neubauer C., Hancock P.A., Great Britain 2012
2. Mamdani E. H. 1977. Applications of fuzzy logic to approximate reasoning using linguistic synthesis. IEEE Transactions on Computers, vol. C-26, No. 12, pp. 1181-1182